REMARKS

Claims 1–4, 6–16, 18 and 19 are pending. Claims 5 and 17 are canceled. Claims 6, 10, 11, 18, and 19 have been amended to remove dependency from non-elected claims.

Independent claims 1, 4, and 16 have been amended to indicate that the whey protein-stabilized emulsion has a fat content in the range of from 3 to 30 percent by weight and a whey protein content in the range of from 5 to 15 percent by weight. Support for these amendments can be found at page 3, paragraph [0043] of the published application.[1] Independent claims 1, 4, and 16 were also amended to indicate that the whey proteins are acidified to a pH in the range of 4.5 to 2.5. Support for these amendments can be found at page 2, paragraph [0035] of the published application.

The claimed process invention is directed to the incorporation of whey proteins into foodstuffs by acidifying an aqueous solution whey proteins below their isoelectric point, forming a whey protein-stabilized fatty emulsion by blending and homogenizing the acidified whey protein solution with one or more fats, and then heat treating the whey protein-stabilized fatty emulsion at a temperature of more than 80 degrees Celsius. The whey protein-stabilized emulsion can then be blended with a foodstuff base to form a foodstuff. The whey protein-stabilized emulsion provides a means for using higher amounts of whey proteins, or to incorporate more whey proteins, into foodstuffs. The foodstuff containing the whey protein-stabilized emulsion can be treated with transglutaminase.

[1] The publication of the present application is cited for the benefit of the reader because the application as filed did not contain paragraph or line numbers.

Rejection of Claims 1–4 Under 35 U.S.C. § 102(b) Under 35 U.S.C. § 102(b) as Anticipated by GB 1440182 to Van Pelt et al.

Van Pelt et al. is directed to oil-in-water emulsions containing fat, emulsifier, and whey protein complexed with an anionic polysaccharide used for making a low calorie whippable cream. Van Pelt et al. does not teach the claimed method. Van Pelt et al. is concerned with forming and maintaining a flocculate of the emulsifier because good foam formation can only be obtained if a flocculate is present. The claimed invention specifically avoids forming a flocculate during acidification. (Published application at page 2, paragraph [0034].)

Not only is Van Pelt et al. focused on foam formation, Van Pelt et al. teaches that the pH should be "in the neighbourhood of" the isoelectric point of the protein—which Van Pelt et al. identifies as a very specific range of pH 4.2 to 5.5—because the flocculate necessary for good foam formation is not dispersed in a protein solution at that pH range. Van Pelt et al. does not teach that the pH should be below the isoelectric point of whey protein, as is claimed. Instead, Van Pelt et al. specifically teaches that an ionized protein "having a pH far from the isoelectric point" will disperse the flocculate and a foam will not be formed. (Page 2, lines 68–72.) While Van Pelt et al. does teach a pH adjustment to pH 3 in Example 1, this acidification step is used to precipitate the polysaccharide and whey protein complexes, a step that is unnecessary in the claimed invention.

Van Pelt et al. teaches that the emulsion should contain from 0.5 to 4 percent globular protein, not 5 to 15 percent by weight whey protein as now claimed. Moreover, each of the examples in Van Pelt et al. involves forming a complex of an

anionic polysaccharide, such as carrageenan or sodium alginate, with whey protein. Van Pelt et al. teaches that whey protein is more heat stable when complexed with an anionic polysaccharide. Such a complex is not required by the claimed invention.

Additionally, the pasteurization step of Van Pelt et al. is much lower than the heating step of the claimed invention. Pasteurization generally occurs at temperatures around 72 degrees Celsius, not above 80 degrees Celsius as claimed. The pasteurization step of Van Pelt et al. would not be sufficient to modify the already changed whey proteins (due to the acidification step below their isoelectric pH) to make them more functional.

Rejection of Claims 1–4, 6–16, 18, and 19 Under 35 U.S.C. § 103(a) over Van Pelt et al in view of EP 0966887 to Soeds

The addition of Soeds in rejecting claims 1–4, 6–16, 18 and 19 fails to cure the deficiencies of Van Pelt et al, described in detail above. Moreover, Van Pelt et al. and Soeds are not combinable. Van Pelt et al. and Soeds, alone or in combination, do not teach acidification below the isoelectric point of whey protein, nor do they teach a heat treatment step of more than 80 degrees Celsius.

Soeds requires that cheese whey protein be at least partially denatured, such as by heat treatment, under increased temperature and alkaline pH. In contrast, the whey proteins in the claimed method are acidified below their isoelectric pH. The inventors of the present application found that pre-treatment of whey protein solutions with a pH below the isoelectric point of whey protein modifies the behavior of whey proteins such that the whey proteins interact with transglutaminases. (Spec page 3, paragraph [0048].) Soeds provides no teaching or suggestion that acidified

whey proteins are able to interact with transglutaminases. Instead, Soeds teaches away from the present invention because Soeds specifically teaches that alkaline pH is required. Furthermore, Soeds further teaches that the heat treatment step should be 80 degrees Celsius "at most," not more than 80 degrees Celsius as claimed. (Soeds, page 4, paragraph [0026].)

Moreover, Soeds does not teach or suggest treating a foodstuff containing whey protein-stabilized emulsion with transglutaminase. Soeds only teaches modifying whey protein by partially denaturing under increased temperature and alkaline conditions, reacting the partially denatured whey protein with a transglutaminase, and only thereafter incorporating the modified whey protein into food products.

Thus, one of ordinary skill would have no motivation to process a foodstuff made with an acidified whey protein-stabilized emulsion as claimed in accordance with the method of Soeds as Soeds clearly emphasizes the importance of denaturing whey protein under alkaline pH before treatment with transglutaminase.

The Commissioner is hereby authorized to charge any additional fees which may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 06-1135.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

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